

REMARKS

Claims 1-14, of which claims 13 and 14 are withdrawn from consideration, remain pending in this application. Applicants acknowledge with appreciate the withdrawal of the prior rejections and objections.

Claims 1-12 are rejected under 35 USC 103(a) as being unpatentable on Admitted Prior Art (APA) in view of Uno (US 5,748,276). This rejection is respectfully traversed.

Claim 1 recites a light modulating device having a number of elements in combination. The claimed combination includes a plurality of separately addressable sub-pixels of different areas and an addressing means. The area of a first separately addressable sub-pixel is smaller than the area of a second separately addressable sub-pixel. The area of the second sub-pixel is not substantially a multiple of the area of the first separately addressable sub-pixel. The first and second sub-pixels each have an equal number of selectable transmission/reflection levels more than two. The addressing means selectively addresses the sub-pixels so as to select any one of the more than two transmission/reflection levels.

This combination of elements as a whole is not taught or suggested, individually or together, by APA or Uno.

The Examiner relies on APA as teaching the subject matter of representative claim 1 but for the area of the second sub-pixel not being substantially a multiple of the area of the first separately addressable sub-pixel, for which the Examiner refers to FIG. 1a of Uno. The Examiner contends that it would have been obvious to modify the ratio of sub-pixel areas of APA in view of the teachings of Uno to arrive at the claimed invention. Applicants respectfully disagree.

Uno refers to a monostable liquid crystal device that is addressed using rms addressing methods. There is no teaching or suggestion in Uno of a selectable number of transmission/reflection levels greater than two. Uno teaches that grey scale can be achieved by varying the magnitude of the applied voltage, as is well known for monostable devices, but the

skilled person would appreciate that this is different from a pixel having separately selectable transmission/reflection levels.

In particular, Uno teaches a device whereby both pixels are controlled with a single TFT. As disclosed in column 5, lines 29-45 of Uno, when a driving voltage V_d is applied from the TFT, the voltage applied to sub-pixel 21a is V_{lc1} . However, the same TFT is coupled to the driving electrodes for sub-pixel 21b in series with control capacitor 22. Thus, the driving voltage V_d also results in a voltage being applied to sub-pixel 21b which is lower than that applied to sub-pixel 21a. Accordingly, any driving signal applied to sub-pixel 21a inherently results in a lower driving voltage being applied to sub-pixel 21b. Further, if no voltage is applied to sub-pixel 21a, then no voltage is also applied to sub-pixel 21b.

Consequently, Uno does not teach or suggest that sub-pixels 21a and 21b are separately addressable. To be separately addressable, it must be possible to address one independently of the other, which is not possible in the device described by Uno. The sub-pixels of Uno are not separately addressable but are linked – in fact, the entire teaching of Uno is directed toward linking the electrical addressing of the sub-pixels in this way to achieve an increased viewing angle effect. Uno does not teach or suggest that the area of one separately addressable sub-pixel is not substantially a multiple of the area of another separately addressable pixel.

In contrast, the claimed subject matter is directed to sub-pixels that are separately addressable – with more than two selectable transmissions/reflection levels – for the purpose of achieving grayscale control in some embodiments. The APA is concerned with similar goals but specifically teaches the importance of ensuring that the area of the second, larger sub-pixel is a multiple of the area of the first sub-pixel.

Accordingly, since Uno teaches sub-pixel division to achieve better viewing angle characteristics when achieving grayscale purely through rms voltage addressing, as is well known for monostable liquid crystal devices, the skilled person would not consider Uno relevant to the claimed subject matter, and would find no teaching in Uno to suggest the use of separately addressable areas having a non-multiple area ratio for grayscale.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejections of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 527122000300.

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